



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,809	07/03/2003	Rick C. Stevens	5744EA-00252	6824
44341	7590	03/08/2005	EXAMINER	
JACOBSON & JOHNSON ONE WEST WATER STREET, SUITE 285 ST. PAUL, MN 55107			STAHL, MICHAEL J	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

GT

Office Action Summary	Application No.	Applicant(s)	
	10/613,809	STEVENS, RICK C.	
	Examiner	Art Unit	
	Mike Stahl	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 10-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-20 is/are rejected.
- 7) ☒ Claim(s) 1,2,4,5,7 and 10-20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Specification

The disclosure is objected to because of the following informalities.

At p. 5 line 26, "bass" should be "base".

At p. 7 line 17, "form" should be "from".

At p. 7 line 27, "mircropores" should be "micropores".

At p. 10 line 7, "doted" should be "dotted".

Appropriate correction is required.

Claim Objections

Claims 10-20 are objected to because they should be renumbered as claims 8-18. It is noted that the application as filed does not contain a claim 8 or claim 9. For purposes of this Office action, the claims will be referenced by their current numbers. However, applicant should renumber them in the response to this action so as not to leave any gaps. See 37 CFR 1.75(f).

Claim 1 is objected to because in line 7, "moveable" should be "moveably".

Claim 2 is objected to because in line 2, "housing" should be "base".

Claim 4 is objected to because in line 2, "transvere" should be "transverse".

Claim 5 is objected to because "the optical transmission conductor" should be replaced with either "the optical fiber" or "the optical waveguide", or both in the alternative. There is no previous recitation of an optical transmission conductor. See claim 3. The recitation of "optical transmission conductor" is problematic in this situation because there are elements other than optical fibers and optical waveguides which can be construed as optical transmission conductors.

Art Unit: 2874

Alternatively, claim 5 could be amended to recite that the first optical element and the second optical element are located at substantially a right angle to each other.

Claim 7 is objected to because in line 3, "remotely reposition" should be replaced with "remotely repositioning" to agree with the rest of the claim.

Claim 10 is objected to because there is no antecedent basis in the claim for "the optical conductor" in lines 6-7. It is noted that claim 10 refers earlier to first and second optical elements. If one of these optical elements is supposed to be an optical conductor, this should be clearly recited in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-6 and 16-18 are rejected under 35 U.S.C. 102(a) as being anticipated by Chen et al. (US 6580858).

Claim 1: Chen discloses a post packaging alignable optical coupling (fig. 5) comprising: a base **101**; a first optical element **135** for receiving or transmitting an optical signal, the first optical element located in a fixed condition on the base; a second optical element **10** for receiving or transmitting an optical signal; a mirror **131** interposed to intercept an optical signal from one of the optical elements, the mirror moveably disposed with respect to the base; and a

Art Unit: 2874

MEMS actuator 139, the actuator supporting the mirror to enable repositioning the mirror to direct the optical signal from the first optical element into alignment with the second optical element or vice versa.

Claim 2: The second optical element 10 is fixedly mounted to the base (col. 4 lns. 10-12).

Claim 3: One of the optical elements is an optical fiber.

Claim 4: The first optical element and the second optical element are located in a transverse condition from each other.

Claim 5: The first optical element and the optical fiber are located at substantially a right angle to each other.

Claim 6: The optical coupling includes at least four optical elements (the fig. 5 embodiment in particular includes five mirrors which are involved in the coupling).

Claims 16-18: The limitations of these claims are met by the Chen module as noted above with respect to various preceding claims. It is noted that the mirror 131 has a reflecting surface larger than an optical port (such as the core of fiber 10 or the aperture of device 135).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2874

Claim 7, 10-15, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (cited above).

Claims 7, 10, and 19: Chen does not expressly disclose a shroud which encompasses the optical elements. Shrouds for integrated optical devices are well known in the art. It would have been obvious to a skilled person at the time the invention was made to have provided the Chen module with a shroud since this would prevent undesirable contamination of the optical surfaces. It is noted that the process of making the Chen module including the proposed modification (addition of a shroud) would have met the limitations of claim 10.

Claim 11: Chen does not disclose an embodiment in which a single mirror is rotatable and tiltable (i.e. a mirror having two rotation axes). Instead Chen uses one mirror 131 with a single rotation axis and another mirror 133 which is translated. The effect of these combined motions is to control the relative x or y positions of the beam upon the device 135 (col. 4 lns. 16-33). Two-axis MEMS mirrors were well known in the art at the time the invention was made. It would have been obvious to a skilled person to have further modified the Chen module by replacing the two movable mirrors with a single two-axis mirror since this could accomplish the same x-y positioning with one fewer mirror. The resultant device would also have been more optically efficient since each additional mirror reduces the efficiency as suggested at col. 4 ln. 55 - col. 5 ln. 11.

Claim 12: The Chen module couples a single fiber 10 to a single device 135, but Chen does not disclose an embodiment wherein multiple fibers are coupled to multiple respective devices via multiple respective repositionable mirrors. However, it has been held that duplication of parts is not patentably significant unless an unexpected result is produced (In re

Art Unit: 2874

Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)). In the present case, it would have been obvious to a skilled person to have constructed the Chen module with at least an additional fiber, an additional device, and an additional train of coupling mirrors, in order to provide the module with a higher signal handling capacity and/or to provide for bidirectional communication.

Claim 13: The method of making the Chen module further includes fixedly mounting an optical conductor **10** to the base.

Claim 14: The method of making the Chen module further includes fixedly mounting a second optical element **135** to the base.

Claim 15: A MEMS actuator **139** is mounted to the base and to the mirror **131**.

Claim 20: Chen does not refer to shipping. It would have been obvious to a skilled person to have constructed and packaged for shipment the basic module of fig. 5, and to have shipped the module without first aligning the optical elements, since this would have saved a processing step at the factory (e.g. the alignment procedure could be outsourced or finalized by an end user of the module), and since it would have avoided any problems with de-alignment of the elements due to forces experienced during shipping.

Conclusion

The additional references listed on the attached PTO-892 form are considered relevant to the disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Stahl at 571-272-2360. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical

Art Unit: 2874

support staff supervisor at 571-272-1626. Official communications which are eligible for submission by facsimile and which pertain to this application may be faxed to 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MSS

Mike Stahl
Patent Examiner
Art Unit 2874

March 1, 2005


Rodney Bovernick
Supervisory Patent Examiner
Technology Center 2800